

Conditionals and Euler diagrams

In this lesson we'll look at how to write conditional statements and how to draw and interpret Euler diagrams.

Conditional statement

A **conditional statement** is an if/then statement where the “if” part is the hypothesis and comes first, and the “then” part is the conclusion and comes second.

You always write a conditional statement like this:

“If A , then B .”

This kind of conditional statement tells you that, if A is true, then B must be true also.

Let's look at an example.

Example

Write the statement as a conditional statement.

“All dogs have fur.”

We need to create a hypotheses and a conclusion from the statement “All dogs have fur.”, and write it as an if/then statement. In this statement, the



hypothesis is “It’s a dog” and the conclusion is “it has fur”. This makes the conditional statement

“If it’s a dog, then it has fur.”

Because we were told that all dogs have fur, we know that if something is a dog, then it must have fur.

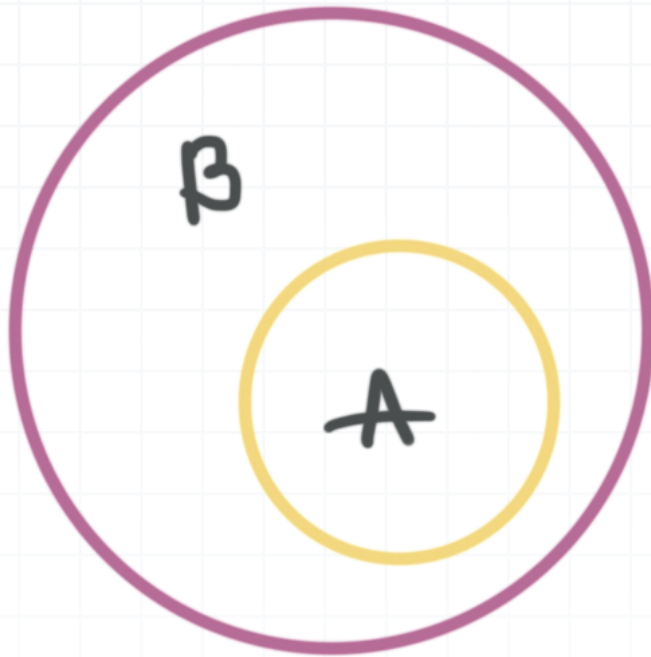
Euler diagrams

An **Euler diagram** shows the exact relationship described in a conditional statement. It’s different from a Venn Diagram, because a Venn Diagram would show all of the possibilities, including the ones not described in the conditional statement.

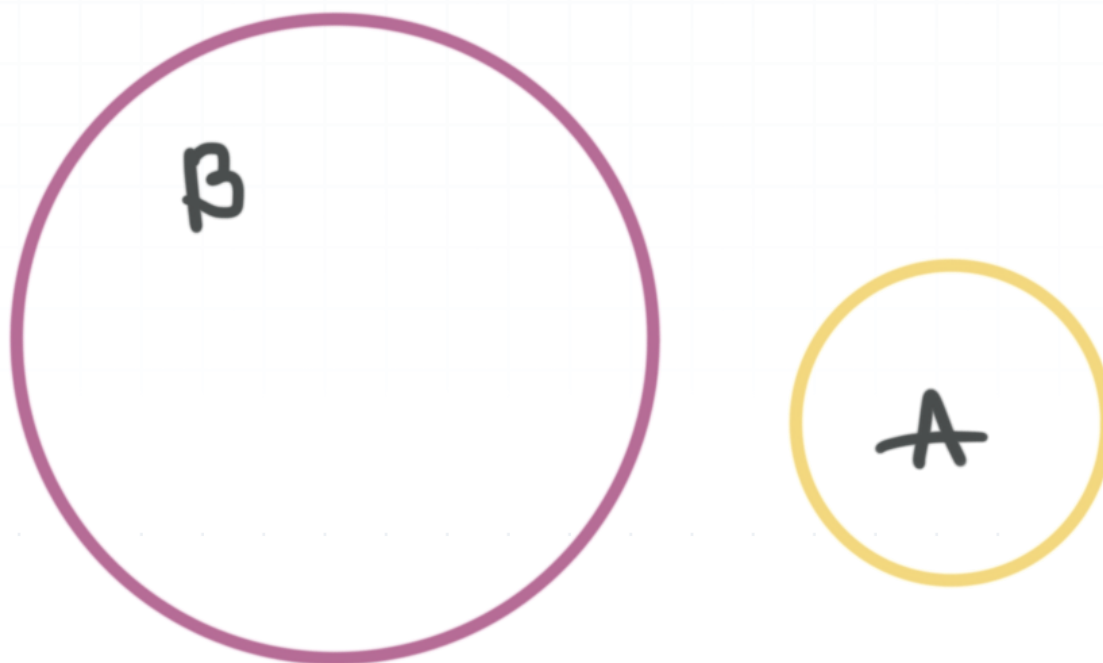
They are often of the form:

“If A , then B .”





“If A , then not B .”

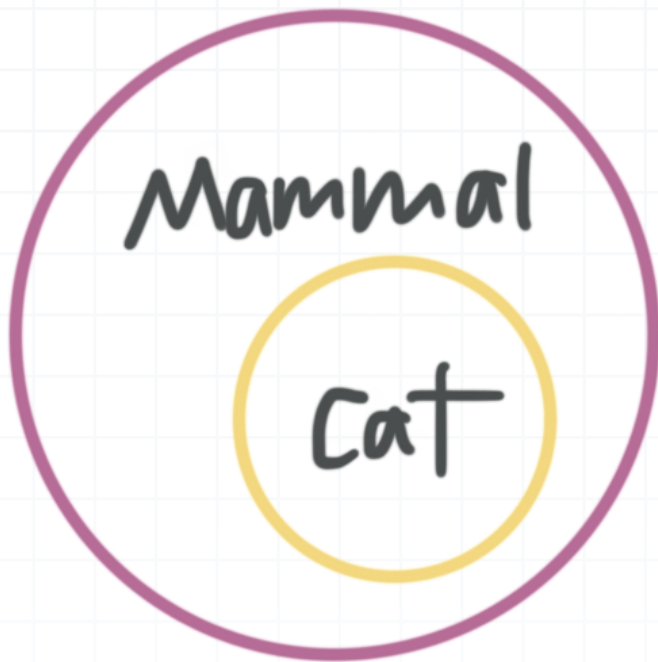


Let's look at an example.

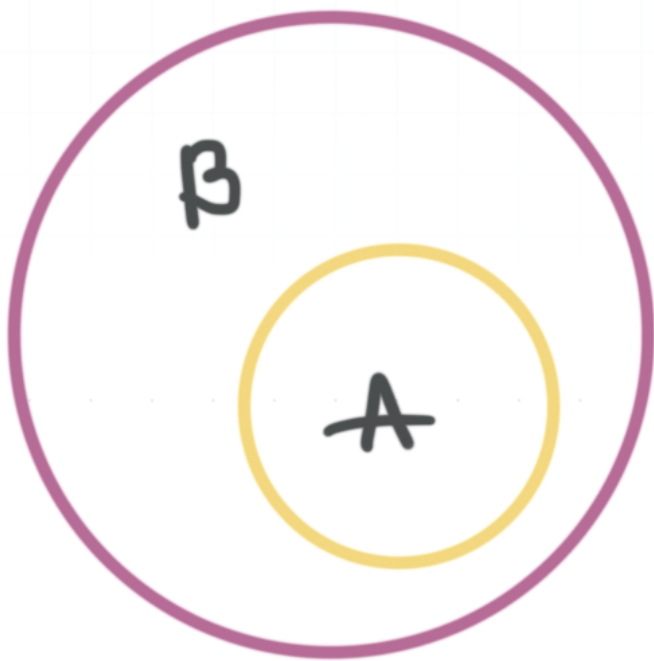
Example

What is the conditional statement represented in the Euler diagram?





The diagram has the form “If A , then B .”



So we replace A and B with the values from the diagram, and we write

“If it’s a cat, then it’s a mammal.”

Let’s tie both ideas together.



Example

Write the following statement as a conditional statement and draw the matching Euler diagram.

“I get my allowance when I do my homework.”

Let's think about what comes first in the statement. First the homework gets done, then there's an allowance. This makes the conditional statement

“If I do my homework, then I get my allowance.”

A is the homework, and B is the allowance, which makes the Euler diagram

